VERMONT
DEPARTMENT OF HEALTH

Cancer Registry
Chronic Disease Epidemiology

Breast Cancer in Vermont

October 2005

Background

Among women, breast cancer is the most commonly diagnosed cancer and a leading cause of cancer deaths in the United States. Nationally breast cancer accounts for 16 percent of all cancer deaths among women, and a woman's risk for developing breast cancer in her lifetime is one in seven. Because breast cancer among males accounts for less than one percent of cancers diagnosed nationally, only female breast cancer is presented in this report.

Breast cancer is a disease in which malignant cells form in the tissues of the breast. A woman's breast is made up of lobules, ducts, fatty and connective tissue, blood vessels, and lymph vessels. Breast cancer can begin in the lobules, ducts, or in the other tissue of the breast, and if left untreated, the cancer can spread to other parts of the body.

The breast cancer data provided in this report are for invasive cases only; *in situ* (non-invasive) are excluded.

Summary

- **Incidence:** In Vermont, breast cancer is the most common cancer diagnosed in women. Each year, in Vermont, approximately 465 breast cancer cases are diagnosed in women.
- **Mortality:** Breast cancer is the second leading cause of cancer death among Vermont women. Each year in Vermont, approximately 97 women die from breast cancer.
- **Vermont vs. U.S.:** Breast cancer incidence and mortality rates between 1997 and 2001 for Vermont women are not significantly different compared to rates for U.S. white women.
- **Yearly Trends:** While breast cancer mortality significantly decreased between 1997 and 2001, there has been no significant change in breast cancer incidence in the United States. There have been no significant changes in breast cancer incidence or mortality in Vermont during the same time period.
- **Age:** Incidence of breast cancer increases with age in Vermont. The majority of breast cancer cases occur in women over age 50.
- **County:** During 1997-2001, breast cancer incidence rates for women in Addison County were significantly higher than the U.S. rate for white women. The breast cancer incidence rates for women in Franklin, Orleans, and Windham County were significantly lower than the U.S. rate for white women. There are not significant differences in Vermont county level breast cancer mortality rates compared to the U.S. total rates.
- **Stage:** In Vermont, 65 percent of breast cancers are diagnosed at the localized stage. According to national survival data, 98 percent of women with localized breast cancer survive for at least five years while 27 percent of women diagnosed with distant staged breast cancer survive at least five years.

Breast Cancer Incidence Compared with Other Cancers

Table 1. The five most commonly diagnosed cancers in females* – Vermont, yearly averages 1997-2001.

Cancer Site	Cases *(per year)*	Percent *(per year)*
Breast	**465**	**30.8%**
Colorectal	186	12.3%
Lung	176	11.7%
Uterus	103	6.8%
Melanoma	73	4.8%
All Sites	1,509	100%

** Excluding basal cell and squamous cell skin cancers and in situ (malignant but non-invasive) carcinomas except urinary bladder.*

- During 1997-2001, on average 1,509 women were diagnosed with invasive cancer each year in Vermont. Of those, on average 465 were cases of breast cancer.
- Breast cancer is the most common cancer diagnosed in women in both Vermont and the United States.

Breast Cancer Mortality Compared with Other Cancers

Table 2. The five most common causes of cancer death in females – Vermont, yearly averages 1997-2001.

Cancer Site	Deaths *(per year)*	Percent *(per year)*
Lung	135	22.5%
Breast	**97**	**16.2%**
Colorectal	72	12.0%
Pancreas	31	5.2%
Ovary	30	5.0%
All sites	600	100%

- During 1997-2001, an average of 600 women died each year from cancer in Vermont. Of these, on average 97 deaths was due to breast cancer.
- Breast cancer was the second leading cause of cancer death in women in Vermont during 1997-2001.
- Breast cancer accounted for approximately 16 percent of all cancer deaths in women in Vermont during 1997-2001.

Breast Cancer in Vermont Compared to the U.S.

Table 3. Rates of breast cancer – Vermont and United States, yearly averages, 1997-2001.

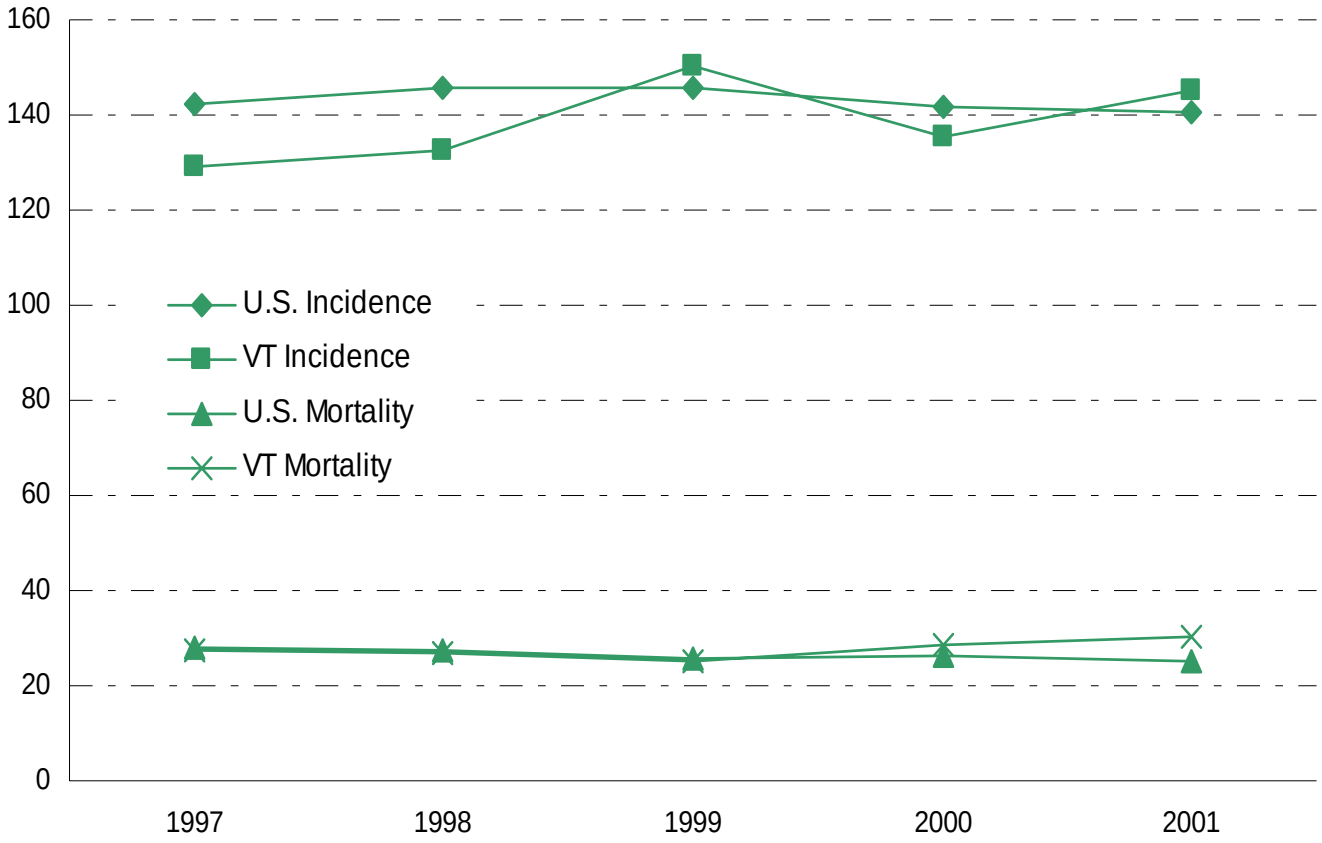
	Female Rates (per 100,000)	
	Incidence	**Mortality**
Vermont	138.6	27.7
United States	143.2	26.5

All rates are age-adjusted to the 2000 U.S. standard population. The U.S. mortality rates are based on the Vital Statistics System of the United States Public Use database. U.S. rates are 1997-2001 white population mortality rates.
The U.S. incidence rates are based on the SEER Cancer Incidence Public Use Database. U.S. SEER incidence rates are 1997-2001 white population rates.

- During 1997-2001, breast cancer incidence and mortality rates in Vermont women were not significantly different than the U.S female white rates.

Breast Cancer Yearly Trends

Figure 1. Incidence and mortality of breast cancer, female – Vermont, 1997-2001.



	1997	1998	1999	2000	2001
VT Incidence	129.0	132.3	150.4	135.7	145.2
US Incidence	142.2	146.0	145.7	141.6	140.8
VT Mortality	27.4	27.1	25.4	28.5	30.2
US Mortality	27.8	27.2	26.0	26.3	25.4

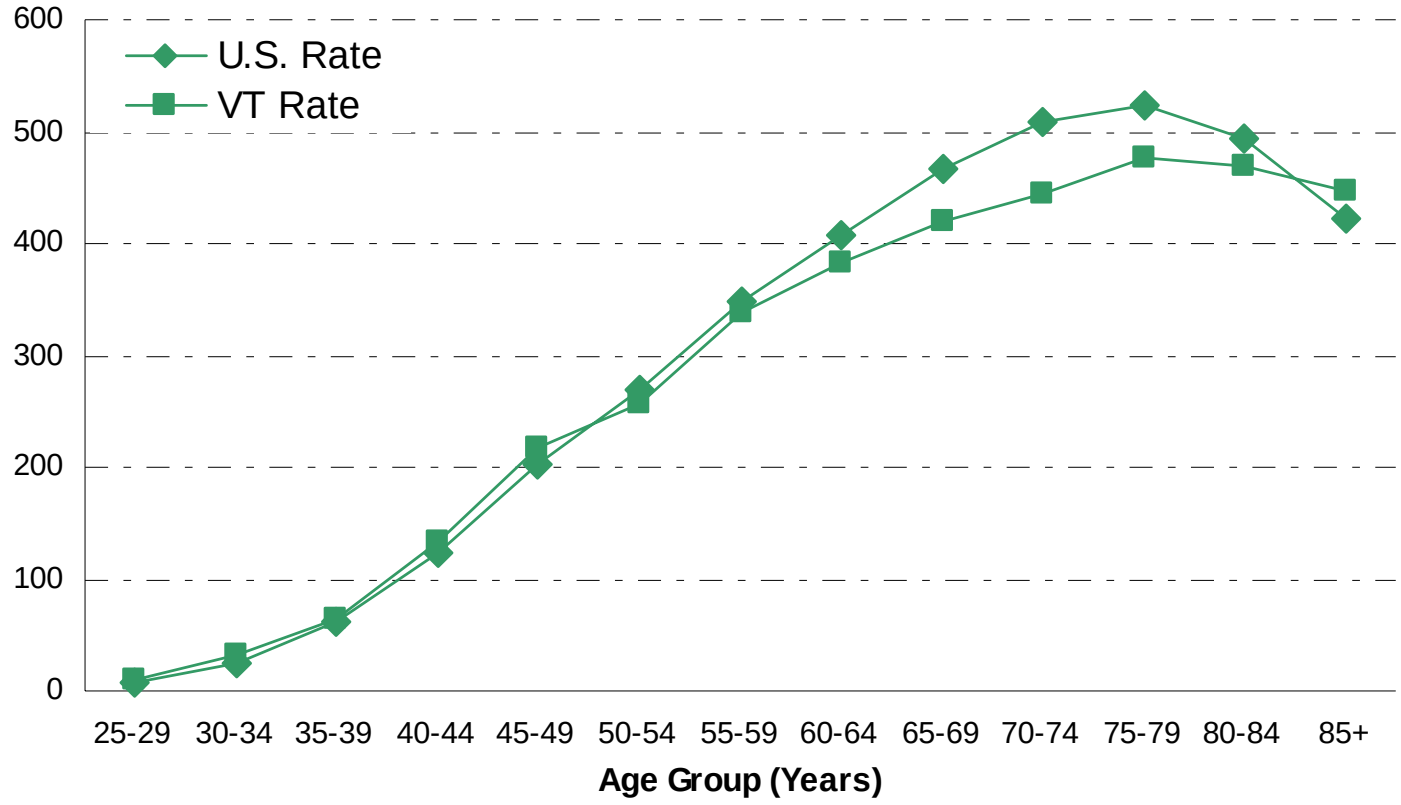
All rates are age-adjusted to the 2000 U.S. Standard population. The U.S. mortality rates are based on the Vital Statistics System of the United States Public Use database. U.S. rates are 1997-2001 white population mortality rates. The U.S. incidence rates are based on the SEER Cancer Incidence Public Use Database. U.S. SEER incidence rates are 1997-2001 white population rates.

- From 1997 to 2001, trend analysis shows that there was no significant change in female breast cancer incidence in Vermont or in the United States.

- From 1997 to 2001, trend analysis shows that there was no significant change in female breast cancer mortality in Vermont. In the United States, during the same time period, female mortality rates decreased significantly from 27.8 per 100,000 in 1997 to 25.4 per 100,000 in 2001.

Breast Cancer Incidence and Age

Figure 2. Breast cancer incidence rates, female by age – Vermont, 1997-2001.



Age Group	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
VT Rate	8.9	31.2	64.1	134.2	216.5	255.7	338.3	383.9	420.3	443.5	477.2	468.2	446.6
US Rate	7.7	25.8	62.0	122.3	202.3	268.7	349.3	407.9	465.6	507.7	523.2	494.1	422.5

All rates are age-adjusted to the 2000 U.S. standard population. The U.S. incidence rates are based on the SEER Cancer Incidence Public Use Database. U.S. SEER incidence rates are 1997-2001 white population rates. From 1997-2001, there were too few cases of breast cancer in Vermonters younger than 25 years old to report. Because of the small number of cases in each age group and gender, these data are not presented. Rates are only presented when the number of cases in a particular age group is at least 6.

- The incidence of breast cancer, as with many cancers, is extremely low in childhood and increases dramatically with age. Breast cancer is most often found women over the age of 50.
- During 1997-2001, 75-79 year old Vermont women had the highest age-specific incidence of breast cancer, at a rate of 477.2 per 100,000.
- During 1997-2001, 70-74 year old Vermont women had a significantly lower incidence rate of breast cancer compared to the U.S. female white rate. No other Vermont age groups were significantly different than the U.S. female white rate.

Breast Cancer Incidence and Mortality, by County

Table 4. Breast cancer incidence rates in females, by county – Vermont, 1997-2001.

County	Incidence Rate (per 100,000)	Mortality Rate (per 100,000)	County	Incidence Rate (per 100,000)	Mortality Rate (per 100,000)
Addison	169.2	30.7	**Lamoille**	140.5	33.8
Bennington	130.6	30.8	**Orange**	119.0	22.4
Caledonia	140.4	36.4	**Orleans**	111.1	34.9
Chittenden	153.0	25.7	**Rutland**	129.0	24.9
Essex	130.3	38.1	**Washington**	146.8	30.1
Franklin	118.0	30.4	**Windham**	118.4	27.1
Grand Isle	136.4	~	**Windsor**	149.1	23.7

All rates are age-adjusted to the 2000 U.S. standard population.
~Rates based on 5 or fewer cases are not individually calculated.

- During 1997-2001, breast cancer incidence rates in Franklin, Orleans, and Windham Counties were significantly lower than the U.S. female white rate of 143.2 per 100,000.

- During 1997-2001, the breast cancer incidence rate in Addison County was significantly higher than the U.S. female white rate.

- During 1997-2001, there were no significant differences in breast cancer mortality rates by county in Vermont compared to the U.S. female white mortality rate of 26.5 per 100,000.

Breast Cancer Risk Factors

While many factors have been associated with breast cancer, most only relate to a moderate increase in risk. This suggests that multiple factors may play a role in each woman's disease and that unrecognized factors may exist.

The following are some factors that have been shown to elevate a woman's risk of developing breast cancer:

- Age: Breast cancer incidence increases with age. Nationally, most women who get breast cancer are over age 50. Women over age 60 are at greatest risk.

- Hormonal Factors: Women who began menstruation at an early age, before 12 years old, or who began menopause after age 55 have an increased risk of developing breast cancer. The use of menopausal hormone therapy drugs for five or more years may increase a woman's risk of developing breast cancer. Having a first child after the age of 35, never breastfeeding, or never bearing children, can increase a woman's risk for developing breast cancer.

- Family History and Genetics: Women who have had breast cancer or have a mother, sister, or daughter with breast cancer, have an increased risk of developing it themselves. Women who inherit specific genes are at a greater risk for developing breast cancer. Research is underway to develop methods of identifying high-risk genes.

- Diet and Lifestyle: Diet is being studied as a risk factor for breast cancer. Studies show that women are more likely to die of breast cancer if they consume a diet high in fat, but it is not known if a diet low in fat will prevent breast cancer. Studies suggest that the consumption of alcohol is associated with a slight increase in risk. Postmenopausal weight gain, especially after natural menopause and/or after age 60, may increase breast cancer risk.

Breast Cancer Prevention and Screening

Currently, there is no known way to prevent breast cancer, only ways to reduce a person's risk. Exercise, especially in young women, may decrease hormone levels and contribute to a decreased breast cancer risk. Breast feeding may also decrease a woman's risk of breast cancer.

Early detection is the goal of breast cancer screening. If breast cancer is diagnosed at an earlier stage, the chances for survival are greater. Mammography, combined with a clinical breast exam, is the most effective means of early detection. It is recommended that women have a mammogram every 1-2 years beginning at age 40.

As part of the Healthy Vermonters 2010 objectives, Vermont set a goal to increase the percentage of women (age 40+) who have had a mammogram at least every two years to 70 percent.

The 2004 Vermont Behavioral Risk Factor Surveillance System can be used to evaluate progress toward meeting this objective. Data show that:

- 75 percent of Vermont women 40 and older had a mammogram in the preceding two years. Vermont has met the Healthy Vermonters goal of 70 percent since 1998.

Breast Cancer and Stage at Diagnosis

Nationally, 98 percent of women whose cancer is diagnosed in a localized stage survive their breast cancers for at least five years. Only 27 percent of women diagnosed with distant stage breast cancer survive for at least five years.

Table 5. Distribution of breast cancer cases by stage at diagnosis – Vermont and the United States, 1997-2000.

Stage at Diagnosis	Vermont	U.S. White
Localized (confined to organ where it began)	65%	65%
Regional - direct extension only	2%	
Regional - regional lymph nodes only	21%	
Regional - Not otherwise specified	0.1%	
Regional - direct extension and regional lymph nodes	3%	
Total Regional	26%	28%
Distant (spread to other parts of the body)	3%	4%
Unstaged (stage not assigned)	6%	3%

Data only includes malignant, invasive, breast cancer cases. Staging numbers are only presented for 1997-2000 due to coding changes that occurred with cases diagnosed 2001 and forward.

- During 1997-2000, only 26 percent of breast cancers were diagnosed in Vermont at the regional stage. In the U.S., 28 percent of breast cancers were diagnosed at the regional stage, which is significantly higher than the Vermont rate.

- In Vermont, during 1997-2000, only 3 percent of breast cancers were diagnosed at the distant stage. This is significantly lower than the U.S. female white rate where 4 percent of breast cancers were diagnosed at the distant stage.

Data Sources

Vermont Cancer Registry: The Vermont Cancer Registry is a central bank of information on all cancer cases diagnosed or treated in Vermont since January 1, 1994. The registry enables the state to collect information on new cases (incidence) of cancer. Previously, the state only kept records on deaths from cancer. The information maintained by the registry allows the Health Department to study cancer trends and improve cancer education and prevention efforts. Suggested Citation: Vermont Department of Health Cancer Registry, 1997-2001. The Vermont Cancer Registry can be contacted at 802-865-7749.

Vermont Vital Statistics: In Vermont, towns are required to file certified copies of death certificates with the Department of Health for all deaths occurring in their jurisdictions. The Health Department is responsible for maintaining the vital statistics system. Suggested Citation: VT Department of Health Vital Statistics System, 1997-2001.

Behavioral Risk Factor Surveillance System: Since 1990, Vermont and 49 other states and three territories track risk behaviors using a telephone survey of adults called the Behavioral Risk Factor Survey. Suggested Citation: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2004.

Surveillance, Epidemiology, and End Results: The National Cancer Institute funds a network of Surveillance, Epidemiology and End Results (SEER) registries. The SEER Program currently collects and publishes cancer incidence and survival data from 14 population-based cancer registries and three supplemental registries covering approximately 26 percent of the U.S. population. These rates are used to estimate the U.S. cancer incidence rates. U.S. incidence is based on the SEER 9 Registries white rates. Suggested Citation: Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Mariotto A, Feuer EJ, Edwards BK (eds). SEER Cancer Statistics Review, 1975-2001, National Cancer Institute. Bethesda, MD, 2004. http://seer.cancer.gov/csr/1975_2001/

U.S. Vital Statistics: The U.S. Public Use Database Vital Statistical System maintains the U.S. mortality rates. Rates presented in this report are for the U.S. white population and were obtained using CDC Wonder. Suggested Citation: United States Department of Health and Human Services (U.S. DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Office of Analysis, Epidemiology, and Health Promotion (OAEHP), Compressed Mortality File (CMF) compiled from CMF 1968-1988, Series 20, No. 2A 2000, CMF 1989-1998, Series 20, No. 2E 2003 and CMF 1999-2001, Series 20, No. 2G 2004 on CDC WONDER On-line Database.

Technical Notes and Definitions

Age Adjustment: All rates in this document are age-adjusted to the 2000 U.S. standard population. This allows the comparison of rates among populations having different age distributions by standardizing the age-specific rates in each population to one standard population.

Incidence: Incidence refers to the number or rate of newly diagnosed cases of cancer. The incidence rate is calculated as the number of new cancers diagnosed in the state during one year divided by the number of residents in the state during the same year. The incidence data presented in this report were coded using the International Classification of Disease for Oncology (ICD-O) coding system. Breast cancer cases were defined with ICD-O-3 codes of C50.4-C50.9 with the exception of histologies 9590-9989 (or equivalent for older data).

Mortality: Mortality refers to the number or rate of deaths from cancer. The mortality data presented here were coded using the International Classification of Diseases (ICD). From 1999 on, cancer mortality site groupings are defined by NCHS and based on ICD-10 classification. Cause of death before 1999 was coded according to ICD-9. Comparability ratios were applied to pre-1999 mortality rates to allow for continuity in trends across the ICD revisions.

Race: U.S. incidence and mortality rates for whites, rather than those for all races, are used for comparison because racial minority groups were estimated to make up 3.1 percent of the total Vermont population, compared with the total U.S. non-white population of 19.6 percent in 2004. Nationwide, whites have a higher risk compared to people of other races for female breast, melanoma, and bladder cancer incidence. Whites have a lower risk compared to other races for prostate, colorectal, and cervical cancer. The much smaller populations of Vermont residents of other races may have very different risks of these cancers. Combining data over many years will be required to determine cancer rates.

Confidence Intervals: A confidence interval is a range of values within which the true rate is expected to fall. If the confidence intervals of two groups (such as males and females, or Vermont and the U.S.) overlap, then any difference between the two rates is not statistically significant. All rates in this report are calculated at a 95 percent confidence level. For example, the age adjusted Vermont male cancer incidence rate is 580.9 *(567.8, 594.2)* per 100,000 and the Vermont female cancer incidence rate is 446.8 *(436.7, 457.0)*. Since the Vermont female confidence interval and the Vermont male confidence interval do not overlap, a statistical difference exists between the two rates.

Small Numbers: Rates are not presented in this report if the number of cases is fewer than 6. For example, if there were 5 cases of breast cancer in women aged 20-24 during 1997-2001, these data would not be presented due to statistical uncertainty.

Suggested Citation

Vermont Department of Health, Breast Cancer in Vermont, 2005.

Acknowledgements

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Vermonters Taking Action Against Cancer (VTAAC)

VTAAC is a statewide partnership of more than 140 individuals, professionals and organizations working together to reduce the impact of cancer on all Vermonters. In 2005 we will publish a comprehensive strategic plan addressing prevention, detection, treatment, survivorship needs, and palliative care related to Vermont's leading cancers. For more information or to get involved call (802) 865-7706 or click www.HealthyVermonters.Info/Cancer.